REMARKS

Claims 1-158 are pending in this application, claims 1-72, 111-121 and 128-149 are withdrawn from consideration and are hereby canceled, claims 82-89, 91 and 110 are allowed, and claims 78 and 99-109 are objected to. By this Amendment, applicants also request addition of new claims 159-257.

I. Priority Claim

Enclosed is a certified copy of Canadian priority application No. 2,329,475.

II. Claim Objections

Applicants have requested that claim 73 be amended to correct the typographical error noted by the Examiner.

Claim 108 has been amended to change its dependency from claim 96 to claim 98, as noted by the Examiner.

Claim 154 has been amended to change "product" to --produce--, to correct the typographical error noted by the Examiner.

III. Rejections under 35 U.S.C. § 112, second paragraph

Claims 90, 92-97, 101, 127 and 127 are rejected as allegedly being indefinite under 35 U.S.C. § 112, second paragraph. Applicants traverse this rejection and request that it be withdrawn.

Claims 90 and 92-97 have been cancelled without prejudice. Applicants reserve the right to file continuing applications directed to the features of these claims.

Applicants have deleted "such as" from claim 101.

Applicants have amended claim 125 to correct the typographical error noted by the Examiner.

Applicants respectfully disagree that claims 125 and 127 are indefinite. The recitation "and combinations thereof" clearly indicates that the species recited in the Markush group can be used alone, and in any combination. Applicants therefore request that the rejection of claims 125 and 127 under 35 U.S.C. § 112, second paragraph, be withdrawn.

IV. Rejection under 35 U.S.C. § 102

Claims 73-74, 77, 79, 122-127, 150-151 and 154 are rejected as allegedly being anticipated by McKey *et al. 's* U.S. Patent No. 4,127,395 (McKey). Applicants traverse this rejection and request that it be withdrawn.

Although dehydration of a feed fluid may be part of the present process, independent claim 73 is directed to producing a feed gas by a process other than dehydration, which is the sole process taught by McKey. The present process uses adsorbents that typically are internally housed in a PSA apparatus or are provided as laminates. These adsorbents are substantially degraded or deactivated upon adsorbing a contaminant, such as but not limited to water, and cannot be readily regenerated as with the materials taught by McKey. McKey teaches using a process dryer that adsorbs water (liquid and vapor) from air. For the embodiment of the present method recited in independent claim 73, water is a "non-product component" of the feed mixture, and not a contaminant. With the present embodiment of claim 73, the feed fluid always includes a desired product component to be purified, an undesired "non-product component" and a contaminant, which can deactivate the adsorbent so that it is not able to separate the product from non-product. In McKey, the water in the adsorbent bed or dessicant bed is regenerated as a matter of course at the end of each cycle using heated air. For internally housed adsorbents used to produce a product fluid other than water, adsorbed contaminant cannot be removed in the same manner as taught by McKey, and adsorbent deactivation is effectively permanent.

Adsorbent deactivation also is more problematic for fast cycle PSA. McKey does not teach a fast cycle PSA. Applicants have amended claim 73 to refer to a fast cycle PSA, and hence such claim is not anticipated for this additional reason.

Applicants also have amended claim 73 to recite using the PSA apparatus to produce a product gas by a process other than dehydration after removal of contaminant from the feed gas. McKey's device is a dryer, and hence the product produced from McKey's process is a gas from which a water contaminant has been removed. The present invention further separates a product fluid from the feed fluid subsequent to contaminant removal. In order for the PSA method to separate such a product fluid, the adsorbents cannot be substantially degraded or deactivated by adsorption of the contaminant. McKey does not contemplate this subsequent separation of a product fluid, and hence McKey does not anticipate claim 73 for this additional reason.

Claims 74, 77 and 79 depend from independent claim 73 and are allowable for the reasons stated above, and further in view of the patentable combination of features recited in these claims.

For example, McKey does not teach a fast cycle device, and further does not teach a PSA apparatus operating at a frequency of at least 30 cycles per minute as recited in claim 76.

Claim 77 recites that the adsorbers include a second material to produce a product fluid by a pressure swing. McKey dries a feed gas, but does not separate a product fluid from this dried feed gas subsequently, and hence does not include a second material to produce a product fluid as recited in claim 77.

Applicants also have requested that independent claim 122 be amended to recite features similar to those discussed above for claim 73. Thus, independent claim 122 is allowable in view of McKey for the same reasons stated above for claim 73, and further in view of the additional combination of features recited in claim 122 relative to claim 73.

Claims 123-127 depend from independent claim 122 and are allowable for the reasons stated for claim 122, and further in view of the patentable combination of features recited in these dependent claims.

Independent claim 150 has been amended to be directed to fast cycle PSA. McKey does not teach this feature, and hence claim 150 is not anticipated by McKey.

Claims 151 and 154 depend from independent claim 150 and are allowable for the reasons stated above for claim 150, and further in view of the patentable combination of features recited in these dependent claims.

V. Rejections under 35 U.S.C. 103

Claims 155-158 are rejected under 35 U.S.C. § 103 for allegedly being obvious in view of McKey. Solely to place the present application in condition for allowance, applicants have canceled claims 155-158 without prejudice. Applicants reserve the right to file continuing applications having claims directed to the features of claims 155-158.

Claims 75, 80-81 and 152 are rejected as allegedly being obvious over McKey in view of Dangieri *et al.*, U.S. Patent No. 4,406,675. Applicants traverse this rejection and request that it be withdrawn.

Claims 75 and152 have been canceled without prejudice.

Applicants have amended claim 80 to refer to a rotary, fast cycle PSA apparatus. Applicants find no teaching in McKey concerning a rotary PSA device, nor a fast cycle PSA device, and hence McKey cannot teach or suggest a rotary, fast cycle device.

Furthermore, Dangieri makes no mention of removing contaminants from a feed fluid, and appears to make no reference to particular contaminants, such as water. Dangieri apparently did not contemplate the problems associated with contaminant degradation and/or deactivation of adsorbents, particularly in a fast cycle, rotary PSA apparatus where adsorbent degradation and/or deactivation is more problematic than in slower, non-rotary systems. Therefore, there is no motivation or suggestion provided by either Dangieri or McKey for the combination relied on by the Examiner for the rejection. Applicants therefore request that the rejection of claim 80 be withdrawn.

Claims 76 and 153 are rejected as allegedly being obvious in view of McKey, Dangieri, and further in view of Mattia, U.S. Patent No. 4,452,612 (Mattia). Applicants traverse this rejection and request that it be withdrawn.

Applicants first assert that a three-way combination should not be used to reject the present claims, as it is only through improper hindsight reconstruction that each and every feature of the rejected claims might be considered to be taught or suggested by such references.

Moreover, claim 76 has been amended to depend from claim 73. Claim 73 has been amended to recite further features that distinguish McKey, the primary reference, for the reasons stated above.

Applicants find no mention in Mattia or Dangieri of the desirability of removing adsorbent contaminants from the feed fluid. The present applicants have discovered that successful commercial implementation of methods for producing product fluids by pressure swing requires taking considerable steps to reduce adsorbent degradation or deactivation. Adsorbent degradation or deactivation can be so problematic as to require premature complete system shut down and replacement of the internally housed adsorbent. Other than McKey, which is limited to a dehydration process in a non-rotary, non fast cycle process, applicants are aware of no teaching or suggestion in either Mattia or Dangieri concerning the need to substantially preclude adsorbent degradation or deactivation in a PSA system used to separate a product fluid from a feed fluid using the techniques claimed in the present application. For this additional reason, applicants request that the rejection of claim 76 be withdrawn.

Claim 153 has been canceled without prejudice.

Claim 98 is rejected under 35 U.S.C. § 103 as allegedly being obvious over Garret *et al.*, U.S. Patent No. 5,507,957. Applicants traverse this rejection and request that it be withdrawn.

Applicants have amended claim 98 to include the limitations of objected-to claim 99. Claim 98 therefore is in condition for allowance.

VI. New Claims 159-257

Applicants have requested that new claims 159-257 be added to this application. Claim 159 is an independent claim, and all of the remaining new claims depend, either directly or indirectly, from claim 159.

Claim 159 is allowable in view of the prior art cited against this application. McKey is the primary reference cited by the Examiner, but McKey is solely directed to a dehydration process. Subsequent to the dehydration of the feed fluid, such as air, no further separation is contemplated by McKey, nor are any method steps provided that accomplish a subsequent separation to produce a product fluid.

It is this second separation step that is of primary consideration for the present application. For example, and solely with reference to one embodiment of the present invention for removing a water contaminant from an air feed, which might be considered applicants' closest embodiment relative to McKey, applicants first attempt to remove a water contaminant from the feed fluid using a guard material. McKey's process ends here. However, applicants' invention thereafter performs a subsequent separation to produce a product fluid. If water or other contaminant contacts the adsorbent used to perform the second separation step, the contacted adsorbent is degraded or deactivated to the point of being substantially unusable for further product production. Thus, the step of "enriching the first component relative to the second component to produce the at least one product fluid" as recited in applicants' new claim 159 is not taught, nor is it suggested, by McKey alone or in combination with the remaining references.

The present application is in condition for allowance, and such action is respectfully requested.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

By _____
Stacey C. Slater
Registration No. 36,011

One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Telephone: (503) 226-7391
Facsimile: (503) 228-9446